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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/943,286 | 08/30/2001 | Kiyotada Nunomura | GP104-03.CN1 | 8507 |

21365 7590 07/28/2004

GEN PROBE INCORPORATED
10210 GENETIC CENTER DRIVE
SAN DIEGO, CA 92121

| EXAMINER | |
|---|---|
| STRZELECKA, TERESA E | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1637 | |

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/943,286 | NUNOMURA, KIYOTADA | |
| | Examiner | Art Unit | |
| | Teresa E Strzelecka | 1637 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *105,106,108-110 and 116* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *105,106,108-110 and 116* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ~~8/30/2001~~. 7/26/04
4) ☒ Interview Summary (PTO-413) Paper No(s)/Mail Date. *7/26/2004*.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 1, 2004 has been entered.

2. Claims 105, 106, 108-110 and 116 were previously pending. Applicant amended claim 105. Claims 105, 106, 108-110 and 116 are pending and will be examined.

3. Applicant's amendment overcame the following rejections: rejection of claims 105, 106, 108 and 116 under 35 U.S.C. 102(e) as anticipated by Aoyagi et al. and rejection of claims 109 and 110 under 35 U.S.C. 103(a) over Aoyagi et al. and Jurriaans et al.

4. Applicant's amendment necessitated new grounds for rejection presented in this office action.

### *Information Disclosure Statement*

The information disclosure statement (IDS) submitted on August 30, 2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### *Claim Interpretation*

5. Applicant provided the following definition of a "pseudo target" (page 8, lines 8-14):

"A "pseudo target" is a polynucleotide that can be co-amplified with the analyte polynucleotide in a single amplification reaction. The pseudo target and the analyte polynucleotide may be amplified using the same set of oligonucleotide primers. However, it is also possible for the

pseudo target and the analyte polynucleotide to co-amplify using independent primer sets. The pseudo target and the analyte polynucleotide will be nonidentical molecules so that the analyte polynucleotide and the pseudo target can be distinguished from each other."

Therefore, a pseudo target according to this definition can be any polynucleotide which is co-amplified with the target polynucleotide.

6. The term "luminometry" is interpreted as detection of luminescence.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 105, 106, 109, 110 and 116 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenstraus et al. (J. Clin. Microbiol., vol. 36, pp. 191-197, January 1998).

Regarding claim 105, Rosenstraus et al. teach a method of determining the presence of Chlamydia trachomatis, Neiseeria gonorrhoeae, Mycobacterium tuberculosis and HCV nucleic acids (= analyte polynucleotides) in a test sample in an amount greater or less than a pre-determined value, comprising the steps of:

obtaining a test sample to be analyzed for the presence of said analyte polynucleotide, said analyte polynucleotide being selected from the group consisting of a viral polynucleotide, a bacterial polynucleotide, a fungal polynucleotide, a protozoan polynucleotide, and a human polynucleotide (Rosenstraus et al. teach obtaining test samples to be analyzed for the presence of C. trachomatis, N. gonorrhoeae, M. tuberculosis (= bacterial polynucleotides), and HCV (= a viral polynucleotide) (page 192, paragraphs 7-10).);

combining said test sample with an amount of a pseudo target (Rosenstraus et al. teach combining the test samples with 20 copies of internal controls (ICs) (= pseudo targets) designed for each reaction (page 192, paragraphs 3-5).);

co-amplifying in a polynucleotide amplification reaction the pseudo target and any analyte polynucleotide contained in said test sample to produce amplification products that include a pseudo target amplicon and an analyte amplicon, wherein said analyte amplicon is produced in an amount that is dose-dependent on the amount of said analyte polynucleotide present in said test sample, and wherein said pseudo target and said analyte polynucleotide are co-amplified using the same set of two oligonucleotide primers (Rosenstraus et al. teach co-amplifying the IC and a sample in a single reaction mix to produce amplicons of C. trachomatis, N. gonorrhoeae, M. tuberculosis or HCV and amplicons of IC (page 192, 11$^{th}$ paragraph). The amplicons are produced in amounts which are dependent on the initial amount of the sample DNA (Fig. 1). The IC and target nucleic acids are co-amplified using the same set of two oligonucleotide primers (page 191, paragraphs 4-9; page 192, first paragraph).); and

quantitatively detecting said analyte amplicon using a detection system calibrated to indicate a positive result upon detecting an amount of analyte amplicon arising from co-amplification of said amount of said pseudo target and an amount of analyte polynucleotide equal to or greater than said pre-determined value, wherein said positive result indicates that said analyte polynucleotide is present in said test sample in an amount equal to or greater than said pre-determined value, wherein a negative result indicates that said analyte polmucleotide is present in said test sample in an amount less than said pre-determined value, and wherein said positive result and said negative result are determined without reference to the amount of pseudo target amplicon synthesized in the co-amplifying step (Rosenstraus et al. teach detecting the amplified fragments of C. trachomatis, N. gonorrhoeae, M. tuberculosis or HCV by hybridization of amplicons to target-specific oligonucleotides bound to magnetic paticles and detecting the complexes colorimetrically, using target-specific and IC-specific probes (page 192, 11$^{th}$ paragraph). Detection was considered

positive if the signals were greater than the test cutoff, regardless of results for IC, and samples were considered as negative when their signal was below cutoff, and the IC signal was positive. They also teach interpreting all PCR results as positive or negative without using the IC results (page 192, 13th paragraph; page page 194, second and sixth paragraphs; Fig. 3). Therefore, Rosenstraus et al. teach determining the positive and negative results without reference to the amount of IC amplicon generated in the co-amplifying step.).

Regarding claim 106, Rosenstraus et al. teach detecting the IC amplicons produced in the co-amplifying step (page 191, fourth paragraph; page 192, last two paragraphs; page 193, first and second paragraphs; Fig. 1 and 2).

Regarding claim 109, Rosenstraus et al. teach detecting HCV DNA, a viral polynucleotide (Abstract; page 192, tenth paragraph; Table 1 and 2).

Regarding claim 110, Rosenstraus et al. teach detecting HCV DNA (Abstract; page 192, tenth paragraph; Table 1 and 2).

Regarding claim 116, Rosenstraus et al. teach an optical detection system by detecting an absorbance value (page 192, 11th paragraph; Fig. 1).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 108 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenstraus et al. (J. Clin. Microbiol., vol. 36, pp. 191-197, January 1998) and Kricka (Clin. Chem., vol. 37, pp. 1472-1481, 1991).

A) Regarding claim 108, Rosenstraus et al. teach detection of hybridization products colorimetrically using avidin-horseradish peroxidase complex (page 192, 11th paragraph; Fig. 1). Rosenstraus et al. do not teach detection system comprising luminometry.

B) Kricka teaches sensitive detection systems based on chemiluminescence and bioluminescence (Abstract). In particular, Kricka teaches using chemiluminescence with horseradish peroxidase in DNA probe hybridization assays and Southern blotting (Table 4). Kricka teaches that a wide range luminometers are available for detecting luminescence signals (page 1473, fifth paragraph).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to have used luminometry of Kricka in the detection method of Rosenstraus et al. The motivation to do so, provided by Kricka, would have been that the detection limits for chemiluminescent (CL) or bioluminescent (BL) assays were superior to colorimetric assays (Table 2) (for horseradish peroxidase, the CL detection limit was about 100 times higher than with a colorimetric detection), the assays were rapid and simple and they could be simplified because of long life of the signal (page 1472, last paragraph; page 1473, paragraphs 1-3).

10. No claims are allowed.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa E Strzelecka whose telephone number is (571) 272-0789. The examiner can normally be reached on M-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on (571) 272-0782. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 26, 2004

Teresa Strzelecka
Teresa Strzelecka
Patent Examiner